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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/580,653	03/30/2007	Wolfgang Stolz	12007-0074	5779
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CLARK & BRODY 1090 VERMONT AVENUE, NW SUITE 250 WASHINGTON, DC 20005			EXAMINER QUINTO, KEVIN V	
			ART UNIT 2826	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/580,653	<b>Applicant(s)</b> STOLZ ET AL.	
	<b>Examiner</b> Kevin Quinto	<b>Art Unit</b> 2826	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>20 April 2007</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Claim Objections*

1. Claims 1-6 and 11-16 are objected to because of the following informalities: the word *epitaxy* in claim 1 is misspelled as "expitaxy." Appropriate correction is required.
2. Claim 5 is objected to because of the following informalities: the word *epitaxy* in is misspelled as "expitaxy." Appropriate correction is required.
3. Claims 9 and 10 are objected to because of the following informalities: the word *epitaxy* in claim 9 is misspelled as "expitaxy." Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
5. Claims 2, 11, 12, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claim 2 recites the limitation "the semiconductor device" in line 3. There is insufficient antecedent basis for this limitation in the claim.
7. Claims 3, 13, and 15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

8. Claim 3 recites the limitations "the active region" and "the device" in line 2. There is insufficient antecedent basis for these limitations in the claim.
9. Claims 4 and 16 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
10. Claim 4 recites the limitation "the semiconductor layers" in line 2. There is insufficient antecedent basis for this limitation in the claim.
11. Claim 11 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
12. Claim 11 recites the limitations "the active region" and "the device" in line 2. There is insufficient antecedent basis for these limitations in the claim.
13. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
14. Claim 12 recites the limitation "the semiconductor layers" in line 2. There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 102***

15. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

16. Claims 1-7 and 9-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Ellmers et al., ("GaAs-based VCSEL-structures with strain-compensated (GaIn)As/Ga(PAs)-MQWH active regions grown by using TBAs and TBP," Journal of Crystal Growth, 1998, Elsevier Science B.V., 195, p. 630-636).

17. In reference to claim 1, Ellmers et al., ("GaAs-based VCSEL-structures with strain-compensated (GaIn)As/Ga(PAs)-MQWH active regions grown by using TBAs and TBP," Journal of Crystal Growth, 1998, Elsevier Science B.V., 195, p. 630-636, hereinafter referred to as the "Ellmers" reference) discloses a structure which meets the claim. Figure 2 of Ellmers discloses a layer succession which features one or several layers by use of TBAs sources and TBP sources. MOVPE, a commonly known epitaxy method, is used to form the structure (p. 631).

18. So far as understood in claim 2, Ellmers makes it clear that at least one layer is realized as a strain compensating layer (abstract, p. 631-632) for surrounding layers of a semiconductor device.

19. So far as understood in claim 11, Ellmers states that one or several layers are arranged in an active region (active QWH layers) of a device (p. 631).

20. So far as understood in claim 12, Ellmers states that one or several layers are arranged in the area of semiconductor layers and are used as a reflector or a multiple layer mirror (p. 631-632, figure 2).

21. So far as understood in claim 14, Ellmers makes it clear that the one or several of the layer successions is for use in optically pumped semiconductor devices for the production of radiation wherein the semiconductor device (abstract, p. 631-632).

22. So far as understood in claim 3, Ellmers states that one or several layers are arranged in an active region (active QWH layers) of a device (p. 631).

23. So far as understood in claim 13, Ellmers states that one or several layers are arranged in the area of semiconductor layers and are used as a reflector or a multiple layer mirror (p. 631-632, figure 2).

24. So far as understood in claim 15, Ellmers makes it clear that the one or several of the layer successions is for use in optically pumped semiconductor devices for the production of radiation wherein the semiconductor device (abstract, p. 631-632).

25. So far as understood in claim 4, Ellmers states that one or several layers are arranged in the area of semiconductor layers and are used as a reflector or a multiple layer mirror (p. 631-632, figure 2).

26. So far as understood in claim 16, Ellmers makes it clear that the one or several of the layer successions is for use in optically pumped semiconductor devices for the production of radiation wherein the semiconductor device (abstract, p. 631-632).

27. In reference to claim 5, Ellmers makes it clear that the one or several of the layer successions is for use in optically pumped semiconductor devices for the production of radiation wherein the semiconductor device (abstract, p. 631-632).

28. In reference to claim 6, Ellmers states that the device features at least one quantum well package which features at least one or two quantum films.

29. In reference to claim 7, Ellmers ("GaAs-based VCSEL-structures with strain-compensated (GaIn)As/Ga(PAs)-MQWH active regions grown by using TBAs and TBP," Journal of Crystal Growth, 1998, Elsevier Science B.V., 195, p. 630-636) discloses a process which meets the claim. Figure 2 of Ellmers shows a structure formed by a method for the production of semiconductor layer structures for the achievement of a strain control of one or several layers (abstract, p. 631-632) which uses TBAs sources (tertiary butyl arsine) and TBP sources (tertiary butyl phosphine). MOVPE, a commonly known epitaxy method, is used to form the structure (p. 631).

30. With regard to claim 9, Ellmers ("GaAs-based VCSEL-structures with strain-compensated (GaIn)As/Ga(PAs)-MQWH active regions grown by using TBAs and TBP," Journal of Crystal Growth, 1998, Elsevier Science B.V., 195, p. 630-636) discloses a process which meets the claim. Figure 2 of Ellmers shows a structure which uses (abstract, p. 631-632) TBAs sources (tertiary butyl arsine) and TBP sources (tertiary butyl phosphine) in an MOVPE method (an epitaxy method) in order to produce tension compensating semiconductor layers.

31. In reference to claim 10, Ellmers makes it clear that compression-strained semiconductor layers are compensated for their strain (p. 631).

***Claim Rejections - 35 USC § 103***

32. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and

the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

33. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ellmers et al., ("GaAs-based VCSEL-structures with strain-compensated (GaIn)As/Ga(PAs)-MQWH active regions grown by using TBAs and TBP," Journal of Crystal Growth, 1998, Elsevier Science B.V., 195, p. 630-636).

34. In reference to claim 8, Ellmers discloses the use of MOVPE at the temperature of 625°C (p. 631). Ellmers does not teach the exact temperature range as that claimed by Applicant. However:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955).

Therefore claim 8 is not patentably distinguishable over the Ellmers reference.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KVQ

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Primary Examiner  
AU 2826